WORK PLACE DPM EMISSIONS CONTROL ESTIMATOR **Mine Name: EXAMPLE MINE FOR 2002 DPM ROLLOUT SEMINARS**
(Estimator instructions at bottom of page)

		Column A		Column B	
1. MEASURED OR ESTIMATED IN MINE DPM EXPOSURE (ug/m3)		850	ug/m3	---	
2. VEHICLE EMISSION DATA					
DPM EMISSIONS OUTPUT (gm/hp-hr)					
INDIRECT INJECTION 0.3-0.5 gm/hp-hr	LHD x 2	0.3	gm/hp-hr	0.3	gm/hp-hr
OLD DIRECT INJECTION 0.5-0.9 gm/hp-hr	Haul Truck x 4	0.3	gm/hp-hr	0.3	gm/hp-hr
NEW DIRECT INJECTION 0.1-0.4 gm/hp-hr	Face drill	0.3	gm/hp-hr	0.3	gm/hp-hr
	Scaler	0.3	gm/hp-hr	0.3	gm/hp-hr
VEHICLE OPERATING TIME (hours)					
	LHD x 2	5	hours	5	hours
	Haul Truck x 4	5	hours	5	hours
	Face drill	3	hours	3	hours
	Scaler	3	hours	3	hours
VEHICLE HORSEPOWER (hp)					
	LHD x 2	460	hp	460	hp
	Haul Truck x 4	1080	hp	1080	hp
	Face drill	160	hp	160	hp
	Scaler	120	hp	120	hp
SHIFT DURATION (hours)		8	hours	8	hours
AVERAGE TOTAL SHIFT PARTICULATE OUTPUT (gm/bhp-hr)		0.27	gm/hp-hr	0.18	gm/hp-hr
3. MINE VENTILATION DATA					
FULL SHIFT INTAKE DIESEL PARTICULATE CONCENTRATION		0	ug/m3	50	ug/m3
VENTILATION AIR QUANTITY (CFM)		200000	cfm	200000	cfm
AIRFLOW PER HORSEPOWER		110	cfm/hp	110	cfm/hp
4. CALCULATED SWA DPM CONCENTRATION WITHOUT CONTROLS		---		992	ug/m3
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5. ADJUSTMENTS FOR DPM EMISSION CONTROL TECHNOLOGY					
ADJUSTED VENTILATION AIR QUANTITY (CFM)		200000	cfm	200000	cfm
VENTILATION FACTOR (INITIAL CFM/FINAL CFM)		1.00		1.00	
AIRFLOW PER HORSEPOWER		110	cfm/hp	110	cfm/hp
OXIDATION CATALYTIC CONVERTER REDUCTION (%)					
	LHD x 2	0	%	0	%
IF USED ENTER 0-20%.	Haul Truck x 4	0	%	0	%
	Face drill	0	%	0	%
	Scaler	0	%	0	%
NEW ENGINE EMISSION RATE (gm/hp-hr)					
	LHD x 2	0.3	gm/hp-hr	0.3	gm/hp-hr
ENTER NEW ENGINE EMISSION (gm/hp-hr).	Haul Truck x 4	0.3	gm/hp-hr	0.3	gm/hp-hr
	Face drill	0.3	gm/hp-hr	0.3	gm/hp-hr
	Scaler	0.3	gm/hp-hr	0.3	gm/hp-hr
AFTERFILTER OR CAB EFFICIENCY (%)					
	LHD x 2	0	%	0	%
USE 65-95% FOR AFTERFILTERS.	Haul Truck x 4	0	%	0	%
USE 50-80% FOR CABS.	Face drill	0	%	0	%
	Scaler	0	%	0	%
6. **ESTIMATED FULL SHIFT SWA DPM CONCENTRATION AFTER IMPLENTATION OF CONTROLS**		**850**	**ug/m3**	**992**	**ug/m3**

Instructions:

Insert data values corresponding to initial conditions in the mine into the upper portion of the spreadsheet (above the dotted line) by placing the curser over the blue numbers and typing in the appropriate values. To the extent possible, use actual data values obtained through measurements in the mine (DPM concentrations, ventilation flows, etc.) or from equipment manufacturers (horsepower, emissions output, etc.). Where actual data or measurements are not available, estimate values.

Insert data values corresponding to planned or possible DPM controls into the lower portion of the spreadsheet (below the dotted line) by placing the curser over the blue numbers and typing in the appropriate values. The spreadsheet provides estimated values for the various controls.

Line 6, **ESTIMATED FULL SHIFT DP CONCENTRATION,** will display the estimated DPM concentration after implementation of the specified controls. **REMEMBER, THIS IS ONLY AN ESTIMATE, AND IT IS ONLY AS GOOD AS THE DATA USED TO CALCULATE IT.**

If you know the DPM concentrations in your mine (through sampling, for example), input all relevent data into both Column A and Column B, but note that only Column A results will be meaningful. If you do not know the DPM concentrations in your mine (ie. you have not conducted DPM sampling), input all relevent data into both Column A and Column B, but in this case, only Column B results will be meaningful.

For a more detailed description of this spreadsheet, and more detailed instructions in its use, see "Estimation of Diesel Particulate Concentrations in Underground Mines" by Robert Haney and George Saseen. This paper can be downloaded from MSHA's Internet web site (www.msha.gov).